

CLAIMS

1. A polymer wherein at least 80% of the repeat units comprise
 - a) an ion-conducting region having an aromatic backbone of one or more aromatic groups, wherein at least one ion-conducting functional group is attached to each aromatic group; and
 - b) a spacer region having an aromatic backbone of at least four aromatic groups, wherein no ion-conducting functional groups are attached to the aromatic backbone.

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2. A polymer according to claim 1, wherein at least 95% of the repeat units comprise the ion-conducting region and the spacer region.

3. A polymer according to claim 1 or claim 2, wherein the one or more aromatic groups in the ion-conducting region are phenylene, napthylene or anthracenylene groups.

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4. A polymer according to any preceding claim, wherein each aromatic group in the aromatic backbone of the ion-conducting region is adjacent to an electron-donating group.
5. A polymer according to claim 4, wherein the electron-donating group is an ether group.

6. A polymer according to any preceding claim, wherein the at least one ion-conducting functional group is a sulphonic acid group.

7. A polymer according to any preceding claim, wherein the ratio of the number of aromatic groups in the spacer region to the number of aromatic groups in the ion-conducting region is at least 2:1.

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8. A polymer according to any preceding claim, wherein the at least four aromatic groups in the spacer region are phenylene, napthylene or anthracenylene groups.

9. A polymer according to any preceding claim, wherein the at least four aromatic groups in the spacer region are connected by electron-withdrawing groups.
10. A polymer according to claim 9, wherein the electron-withdrawing groups are sulphone or ketone groups.
11. A polymer according to any preceding claim, which has an equivalent weight of less than 800g/mol⁻¹.
- 10 12. A polymer according to any preceding claim, which has an inherent viscosity of greater than 1.0dl/g.
13. A polymer solution comprising a polymer according to any one of claims 1 to 12.
- 15 14. A polymer electrolyte membrane comprising a polymer according to any one of claims 1 to 12.
15. An electrocatalyst layer on a substrate wherein the electrocatalyst layer comprises a polymer according to any one of claims 1 to 12.
- 20 16. A membrane electrode assembly comprising a polymer electrolyte membrane according to claim 14 and/or an electrocatalyst layer according to claim 15.